THINKING · LEARNING · CREATING

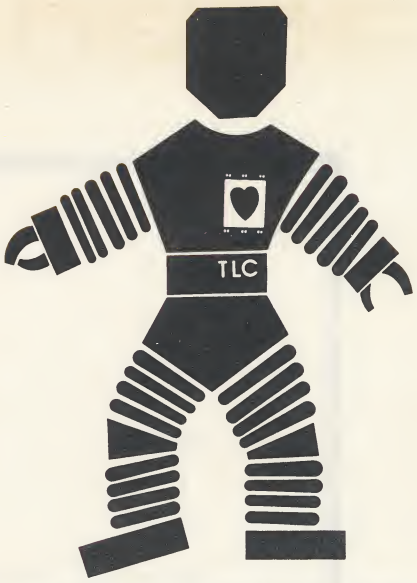
TLC

ATARI®

for Growing Minds

Volume 1

® A registered trademark of Arari, Inc.



THINKING · LEARNING · CREATING

TLC

ATARI®

for Growing Minds

Volume 1

by Nancy Taitt

CREATIVE LEARNING ASSOCIATION, INC.
RR#4, Box 330
Charleston, Illinois 61920

ISBN 0-88193-071-7

© 1983 **CREATIVE LEARNING ASSOCIATION, INC.**

Charleston, Illinois 61920

All rights reserved. No part of this book, except for brief passages in articles and reviews that refer to both author and publisher, may be reproduced without written permission of the publisher.

Table of Contents

CHAPTER 1: GETTING TURNED ON AND OFF

Page

Turning the Computer On and Off 1
RUN 2
PRINT 2
Line Numbers. 5
DELETE
BACK S 5
GR.Ø 6
NEW 7
PRINT (for blank lines) 9
Spaces inside quotation marks 9
LIST 12
Comma Use 15
Review. 17

CHAPTER 2: GOTO, THE PROGRAMMER'S MERRY-GO-ROUND

GOTO. 18
BREAK 18
CONT. 20
END 22
Review. 24

CHAPTER 3: SAVE AND LOAD ON TAPE

CSAVE 26
Semicolon 28
Time Delay. 30

Creative Learning Association
Charleston, IL 61920

Table of Contents (continued)

Page

CLOAD 32

Review. 34

CHAPTER 4: LET'S MAKE A LITTLE MUSIC!

SOUND 35

System Reset 35

Tone Frequency Values 37

Chords 39

Sound effects 41

Review. 42

CHAPTER 5: GRAPHICS MODE 1 AND 2

GR.1 43

GR.2 44

Text window 44

Graphics window 44

Position X,Y 45

GR. +16 47

Review. 48

Reference 49

Creative Learning Association
Charleston, IL 61920

CHAPTER 1: GETTING TURNED ON

INFORMATION

To Turn the Computer On:

1. Turn on the monitor or T.V. set.

2. Turn on the computer. The switch is located along the right side. It is the rear most of the two black switches.

3. Your screen should say:

   READY

4. There will be a solid white box beneath the word READY. This is the cursor. It shows you where you are on the screen.

5. Type several keys. If they are not capital letters, hold the [SHIFT] key and press [CAPS LOWR] to make them capitals.

6. Press the [RETURN] key. Ignore the ERROR message.

To Turn the Computer Off:

1. Turn the keyboard switch off.

2. Turn the screen off.

INFORMATION

Throughout this book, you will encounter sections labeled ENTER/RUN/OBSERVE. In each of these sections will be a program. Type each program line exactly as it is shown. Then press the RETURN key to enter it into the computer. After all the lines have been entered, type RUN and press the RETURN key. Observe what happens and try to understand why. Have fun!

ENTER/RUN/OBSERVE

Type the line in the box of stars below.

```
*****************************************
*                                       *
* 1Ø PRINT "HELLO"                      *
*                                       *
*****************************************
```

Use the zero located on the top row. Press RETURN. This enters the line into the memory of the computer. Now type RUN and press RETURN. Notice that the computer obeys your command and prints HELLO. It then prints READY on the screen, waiting your next instruction.

CHANGE IT/RUN/OBSERVE

Type this line again. This time change it so it will print GOODBYE. Be sure to press RETURN. Then RUN your program to be sure it works.

CHANGE IT/RUN/OBSERVE

What happens when you enter and RUN this program?

```
10 PRINT "HELLO THERE!"
```

Notice the program that <u>was</u> in line 10 has been replaced by your new program.

CHANGE IT/RUN/OBSERVE

Now add this:

```
20 PRINT "HOW ARE YOU?"
```

Remember to press RETURN after typing in a line.

Now RUN.

Notice that this line does NOT replace your last program because you gave it a different line number.

CHANGE IT/RUN/OBSERVE

Now try this:

```
*****************************************
* 3Ø PRINT "FIND, THANK YOU!"           *
*                                       *
*****************************************
```

Now RUN it.

The computer will print your message exactly as you type it. It will even print your misspelled words if you remember to enclose them within quotations.

CHALLENGE

Create a new message by changing line 3Ø. Just type it again. RUN it to be sure it works.

INFORMATION

A computer program is simply a list of commands for the computer to follow. These commands must be in some sort of order for the same thing to happen each time the program is run. This is accomplished by giving each command a number, called a line number. The computer follows the commands in numerical order.

ENTER/RUN/OBSERVE

```
10 PRINT "RONALD REAGAN"
20 PRINT "PRESIDENT"
30 PRINT "IN 1980"
```

Hint: If you mistype a letter, press DELETE BACK S to go back and erase your mistake. This only works if the line hasn't been entered yet! If you enter a line with a mistake in it, simply type the line again the correct way using the same line number.

CHANGE IT/RUN/OBSERVE

Now add this line to your program and see what happens when the program is run.

```
15 PRINT "BECAME"
```

Even though you entered line 15 after line 3Ø, the computer executes it in its numerical order. Experienced programmers number program lines by tens (1Ø, 2Ø, 3Ø, 4Ø...) because then there will be plenty of room to go back later and insert lines if necessary.

Now add this line to your program and RUN again.

```
5 GR.Ø
```

GR.Ø is a very handy command. Whenever the computer encounters this, it clears the screen. Using GR.Ø before you print something on the screen makes your screen look much neater and easier to read. GR.Ø is an abbreviation for GRAPHICS Ø.

INFORMATION

The command NEW erases any programs that are in the computer's memory. NEW, like RUN, is a command that is a direct operation for the computer. Just type it and press [RETURN]. It doesn't need to be assigned a line number.

ENTER/RUN/OBSERVE

```
*****************************************
*                                       *
* NEW                                   *
*                                       *
*****************************************
```

When you try RUNing after entering the above line, the screen should display READY. Turning the computer off has the same effect as NEW .. you lose your program!

Notice it does NOT clear the screen!

From now on, always erase your old program before entering a new one into the computer. If you don't, you are likely to mix lines of both programs.

CHALLENGE

Program the computer to print your name and address on the screen. After it has done this, make the computer print your phone number after your name and before your address. After you have run it this way, add another program line so that your age is printed after your address. (Remember you're the one in command!) If you haven't already, add a command so that the screen is cleared before the information about yourself is printed on the screen.

INFORMATION

To print a blank line, use the PRINT command with nothing after it.

ENTER/RUN/OBSERVE

```
10 GR.0

30 PRINT "RONALD REAGAN"

50 PRINT "WAS BORN IN"

70 PRINT "TAMPICO, ILLINOIS"
```

CHANGE IT/RUN/OBSERVE

```
20 PRINT

60 PRINT
```

CHANGE IT/RUN/OBSERVE

```
70 PRINT "       TAMPICO, ILLINOIS"
```

Spaces placed inside quotation marks will be printed as blank spaces on the screen, as in line 70 above. This is helpful when you want to center words on the screen.

CHALLENGE

Use NEW to erase your old program first.

Create a program that will cause the computer to print a short five-line news release about your favorite politician. The message can be good or bad! Have each line centered on the screen.

ANOTHER CHALLENGE

See if you can program your computer to reproduce the following display on your screen. Can you place it in the center of your screen?

```
C
O
M
P
U
 ATARI
E
ATARI
```

Do not erase this program. You'll need it on the next page.

INFORMATION

The command LIST is an operation for the computer like NEW and RUN. When you enter LIST, the computer lists the program in its memory on the screen.

ENTER/RUN/OBSERVE

```
*****************************************
*                                       *
* LIST                                  *
*                                       *
*****************************************
```

As soon as you press RETURN, the computer performs the LIST command. When you enter RUN, your program from the last challenge will be followed.

CHANGE IT/RUN/OBSERVE

Suppose your program from the last challenge looks something like this:

```
10 GR.0
20 PRINT "          C"
30 PRINT "          O"
40 PRINT "          M"
50 PRINT "          P"
60 PRINT "          U"
70 PRINT "         ATARI"
80 PRINT "          E"
90 PRINT "       ATARI"
```

Try entering each command below (one at a time!) and observe what is printed each time. (You may need to change the numbers to suit your program.)

```
LIST 50
LIST 10, 40
```

These are two variations of the LIST command. They'll come in very handy when you are working with longer programs because their entire listings won't fit on the screen at the same time.

CHALLENGE

Cause the following lines to be listed on your screen.

1. Any 1 line of your program.
2. The entire program.
3. The last 3 lines of the program.
4. Every line except the last one.
5. Every line except the first one.
6. Any 4 lines in the middle of your program.

INFORMATION

A comma (,) used along with a PRINT statement causes an item to be printed in the next pre-set zone. The comma must be outside any quotation marks.

ENTER/RUN/OBSERVE

Type NEW. Then enter these lines.

```
10 PRINT "TITLE","FIRST","MIDDLE","LAST"
20 PRINT
30 PRINT "MR.","EDGAR","ALLAN","POE"
40 PRINT "MRS.","MARY","TODD","LINCOLN"
50 PRINT ,"JOHN",,"DOE"
```

CHANGE IT/RUN/OBSERVE

```
10 PRINT "CITY","STATE","ZIP
20 PRINT
30 PRINT "BONEGAP","IL","62815"
40 PRINT "TOWAOC","CO","81334"
50 PRINT "YOAKUM","TX",77995
```

Notice that numbers don't have to be enclosed in quotations to be printed.

CHALLENGE

Create a program that produces two columns of words. In the left column, print those things that are good for you. In the right column, print only those things that are bad for you!

REVIEW: Choose the command or key which will cause the function described below.

COMMAND/KEY	FUNCTION
	This command causes something to be printed on the screen.
	Pressing this key enters information into the computer.
	Entering this causes the computer to follow the program in memory.
	This key moves the cursor to the left.
	This useful command clears the screen and places the cursor in the top left-hand corner of the screen.
	Be careful! This command erases your program!
	This command will give you a listing of the program in the computer's memory.
	When used with PRINT, this causes the cursor to move to the first space in the next preset zone.

CHAPTER 2: GOTO, THE PROGRAMMER'S MERRY-GO-ROUND

INFORMATION

GOTO sends the computer directly to another program line. Therefore, you must always include a program line number in every GOTO statement.

ENTER/RUN/OBSERVE

```
10 PRINT " YOU ARE A GREAT PROGRAMMER"
20 GOTO 10
```

When you want to stop the program, press BREAK. Notice the computer tells you which line it was obeying when you stopped it.

CHANGE IT/RUN/OBSERVE

Now RUN the program with line 5 added and line 20 changed somewhat as shown below.

```
 5 GR.0
20 GOTO 5
```

Using GR.0 and GOTO together creates a flashing effect, as you've discovered.

CHALLENGE

In a 2- or 3-line program, create your own endless loop using commas and the GOTO command. Try to obtain a pleasing design that includes letters, numbers, and symbols. Go all out, have fun! Do not type NEW when you are through, as you will need this program on the next page. LIST your program often as you are creating it.

INFORMATION

The command CONT makes a program continue (when possible) from the point at which it was stopped.

ENTER/RUN/OBSERVE

Run your program from the last challenge, then stop it using BREAK. Now type

```
CONT
```

and see what happens. CONT is another direct operation for the computer. (Remember LIST, NEW, and RUN?) Therefore, it isn't assigned a line number.

ENTER/RUN/OBSERVE

```
10 GR.0
20 PRINT X
30 X=X+1
40 GOTO 20
```

In line 20, the letter X is a variable. X is increased by 1 every time the computer

comes to line 3Ø. Try stopping the program and then starting it again by both the RUN and CONT methods. This program clearly illustrates the difference between these two commands.

CHANGE IT/RUN/OBSERVE

```
*****************************************
* 2Ø PRINT "I AM NOW PRINTING #",X      *
*****************************************
```

CHANGE IT/RUN/OBSERVE

Add these lines.

```
*****************************************
* 2Ø PRINT X, Y                         *
* 25 Y=Y+2                              *
*****************************************
```

CHALLENGE

Can you create a program that will print the multiples of 3 in one column and the multiples of 5 in another column? LIST and RUN your program.

INFORMATION

The command END makes the computer stop running the program. It ENDs execution.

ENTER/RUN/OBSERVE

Clear the memory before entering this program:

```
10 GR.0
20 GOTO 70
30 PRINT "IS FEAR ITSELF."
40 END
50 PRINT "WE HAVE TO FEAR"
60 GOTO 30
70 PRINT "THE ONLY THING"
80 GOTO 50
```

CHANGE IT/RUN/OBSERVE

Delete line 40 from the program above and run it again. To delete line 40, type 40 and press RETURN. Now LIST. Then RUN.

See the tremendous difference one command can make? You will learn other uses for END as you learn other commands.

CHALLENGE

Create a program similar to the one above that will print a favorite saying or poem of yours. Use lots of GOTOs to mix the lines up in the listing.

REVIEW: Choose the command or key which will cause the function described below.

COMMAND/KEY	FUNCTION
	This command sends the computer directly to another line in the program.
	Pressing this key will stop or interrupt your program. It enables you to gain control of the computer.
	Entering this command after stopping a program will often cause a program to continue running from the point at which it was stopped.
	When your computer encounters this command, it ends the program.

CHAPTER 3: SAVE & LOAD ON TAPE

INFORMATION

Whenever you turn your computer off, any program in its memory is lost. However, there is a way to save your program--on cassette. In this chapter you will learn how to save programs on tape, and later you will learn how to load programs that are on tape back into the computer. Make sure the volume setting on the tape recorder is the same when you save and load your tape.

The command to save a program on a cassette tape is CSAVE.

ENTER/RUN/OBSERVE

Be sure that your cassette recorder is hooked up to the computer. Now follow these steps in the order given.

1. First you must have a program to save. So if there isn't one in your computer's memory, write one now. Be sure that it runs properly.

2. Put a blank cassette tape in the recorder, and close the lid.

3. Now type:

```
**********************************
*                                *
* CSAVE                          *
*                                *
**********************************
```

and press [RETURN].

4. You will hear a buzzer sound twice.

5. On the tape recorder, firmly press down both the [PLAY] and [REC] buttons.

6. Then press [RETURN].

7. Notice the recorder starts turning. Watch the screen. When it says

READY

the tape will stop.

8. Press [STOP/EJ] on the recorder.

9. Press [REWIND] on the recorder.

10. When the tape stops rewinding, press [STOP/EJ].

11. Press [STOP/EJ] again to eject the tape.

12. Remove and label the tape.

The label should contain:

Atari Your Name Program Name

so that you will know which computer it will work with, who owns it, and what program it is.

Save this tape because you will soon be learning how to load programs back into the computer.

You now have a copy of your program. Treat the tape with care. Keep it away from heat, magnetic fields, food, and water.

INFORMATION

A semicolon (;) used along with a PRINT statement makes the computer print on the same line of the screen until that line is full. The semicolon must be outside of any quotation marks.

ENTER/RUN/OBSERVE

```
10 GR.0
20 PRINT "ROBOT";
30 GOTO 20
```

CHANGE IT/RUN/OBSERVE

```
20 PRINT "ROBOT    ";
```

Notice what a big difference the number of spaces inside the quotation marks made!

CHALLENGE

Write a program that will print your name all over the screen. Then see if you can change it so that: (see next page!)

1. Your name is printed in columns.

2. Each name is printed right after the last one with no spaces in between.

3. Any design of your choosing.

ENTER/RUN/OBSERVE

```
 1Ø GR.Ø
 2Ø PRINT "#######"
 3Ø PRINT "# O O #"
 4Ø PRINT "#  Ø  #####"
 5Ø PRINT "###-#######"
 7Ø GR.Ø
 8Ø PRINT "#######"
 9Ø PRINT "# . . #"
1ØØ PRINT "#  !  #"
11Ø PRINT "##---##"
112 PRINT "  ###"
114 PRINT "  ###"
116 PRINT "  ###"
118 PRINT "  ###"
13Ø GOTO 1Ø
```

Remember to LIST your program whenever you wish to see what is really stored in the computer.

CHANGE IT/RUN/OBSERVE

Add these lines and watch:

```
60 FOR T=1 TO 20
65 NEXT T
120 FOR T=1 TO 20
125 NEXT T
```

CHANGE IT/RUN/OBSERVE

Now try this:

```
60 FOR T=1 TO 200
120 FOR T=1 TO 200
```

CHANGE IT/RUN/OBSERVE

Now this: (Remember, press RETURN after each line.)

```
65
60 FOR T=1 TO 200:NEXT T
125
120 FOR T=1 TO 200:NEXT T
```

CHALLENGE

Notice the difference between using 2Ø and 2ØØ. Try other values. Then change the face to represent your self-portrait.

INFORMATION

It is now time to learn how to put programs that are on cassette tape back into the computer. The command that does this is CLOAD.

ENTER/RUN/OBSERVE

Follow these steps in the order given to load a tape into the computer.

1. Place the tape that you saved a program on earlier in the tape player making sure that the tape is rewound. Close the lid.

2. Type:

```
*******************************
*                             *
* CLOAD                       *
*                             *
*******************************
```

   Then press [RETURN].

3. This time the buzzer only sounds once!

4. Press [PLAY] on the recorder. Then press [RETURN] on the computer.

5. Notice that the recorder is turning. Watch the screen for the word:

   READY

6. Press STOP/EJ on the recorder. Then press REWIND.
7. When the tape is rewound, press STOP/EJ twice.
8. Remove the tape and place in a safe place.

RUN your loaded program to see if it runs properly.

CHALLENGE

Create a program that will place in column one, five people you like; in column two, the amount of money you would lend them; in column three, the amount of money they would lend you (Remember, it's your program, might as well think big!) and in column four, what you would be tempted to buy with the money. Save the program on tape. Then erase the program in the computer's memory by typing NEW. Can you successfully load the program back into the computer? As you start writing longer and more involved programs, you'll probably want to save many of them on tapes.

REVIEW: Choose the command or key which will cause the function described below.

COMMAND/KEY	FUNCTION
	This is the command that you use to save a program from a computer's memory onto a cassette tape.
	Used with a PRINT statement, this makes the computer print on the same line until that line is full.
	Use this command to copy a program from a cassette tape into the computer's memory.

CHAPTER 4: LET'S MAKE A LITTLE MUSIC!

INFORMATION

With SOUND, your computer can produce sounds. You can control the voice (Ø-3), the pitch or frequency (Ø-255), the distortion (Ø-14), and the volume of the sound (1-15). Make sure the volume on your screen is turned up so you can hear the sounds your program will produce.

ENTER/RUN/OBSERVE

```
10 SOUND 1,121,10,10

60 GOTO 10
```

1 is the voice, 121 is related to the tone frequency of middle C, 10 is the distortion factor and the second 10 is the volume level.

To stop the sound, press [SYSTEM RESET].

If you do not get a sound coming from your T.V. set when you RUN the above program, check the volume setting on your T.V.

CHANGE IT/RUN/OBSERVE

Add these lines:

```
30 SOUND 1,96,10,10
40 SOUND 2,81,10,6
50 SOUND 3,72,10,4
```

Remember to stop the sound, press SYSTEM RESET.

On the next page is a table of information for those who would like to produce musical notes.

CHALLENGE

Alter the program above to make a different musical sound, using three voices. Let each voice use a different volume. See page 37 for frequency numbers.

TONE FREQUENCY VALUES

Note	Frequency Number
C	243
C# D♭	230
D	217
D# E♭	204
E	193
F	182
F# G♭	173
G	162
G# A♭	153
A	144
A# B♭	136
B	128
Middle C	121
C# D♭	114
D	108
D# E♭	102
E	96
F	91
F# G♭	85
G	81
G# A♭	76
A	72
A# B♭	68
B	64
C	60

ENTER/RUN/OBSERVE

```
10 SOUND 1,96,10,5
20 SOUND 1,108,10,5
30 SOUND 1,121,10,5
40 SOUND 1,108,10,5
50 SOUND 1,96,10,5
60 SOUND 2,96,10,5
70 SOUND 3,96,10,5
```

RUN this and listen quickly! It needs to be slowed down.

CHANGE IT/RUN/OBSERVE

```
15 FOR T=1 TO 100:NEXT T
25 FOR T=1 TO 100:NEXT T
```

Now RUN.

CHANGE IT/RUN/OBSERVE

Add time delaying lines between the other lines.

CHALLENGE

Add the next line of this song to your program, or if you wish, create your own song!

INFORMATION

When using the command SOUND, you can also make two and three note chords.

ENTER/RUN/OBSERVE

```
10 SOUND 1,96,10,5
20 SOUND 2,81,10,5
30 FOR T=1 TO 300:NEXT T
```

CHANGE IT/RUN/OBSERVE

Add these lines:

```
40 SOUND 1,91,10,5
50 SOUND 2,72,10,5
60 FOR T=1 TO 300:NEXT T
```

CHANGE IT/RUN/OBSERVE

Now these:

```
70 SOUND 1,96,10,5
80 SOUND 2,81,10,5
90 FOR T=1 TO 300:NEXT T
```

CHALLENGE

Write a short song using single notes and two note chords. Don't worry too much about how it sounds!

ANOTHER CHALLENGE

1. See if you can make the computer play a scale, one note at a time. (C,D,E,F,G, etc...)
2. Next, try going up the scale in two-note chords. (C+E,D+F,E+G,F+A, etc...)
3. Now try it with three-note chords. (C+E+G,D+F+A, etc...) Try to make some chords longer and louder than others. Have fun!

INFORMATION

Your Atari can make other sounds. Instead of using 1Ø for the distortion value, use 12.

ENTER/RUN/OBSERVE

Try this:

```
10 SOUND 1,108,12,5
20 SOUND 2,96,12,5
30 GOTO 10
```

Add these lines:

```
25 SOUND 3,29,10,5
27 SOUND 0,60,10,10
```

Many sound effects can be produced this way.

CHALLENGE

See if you can make your computer sound like a fuzzy radio station. How about your alarm clock or a train!

REVIEW: Choose the command or key which will cause the function described below.

COMMAND/KEY	FUNCTION
	With this command, you can control the voice, pitch or frequency, distortion and volume of the sound your computer produces.
	Press this key to stop the sounds and interrupt program execution.

CHAPTER 5: GRAPHICS MODE 1 AND 2

INFORMATION

The Atari has many different ways to display information on the screen. Below are some of the characteristics of the GRAPHICS 1 and GRAPHICS 2 modes.

ENTER/RUN/OBSERVE

```
10 GR.1
20 PRINT #6;"ATARI"
```

Notice the letters are twice as wide but <u>not</u> twice as tall.

CHANGE IT/RUN/OBSERVE

Make this change:

```
10 GR.2
```

Now they are twice as wide <u>and</u> twice as tall.

CHANGE IT/RUN/OBSERVE

```
20 PRINT "ATARI"
```

Notice that without #6 after the PRINT command, the word ATARI was printed at the bottom of your screen. The bottom part is called the TEXT window while the top part is called the GRAPHICS window.

CHANGE IT/RUN/OBSERVE

Add this line:

```
*******************************************
* 3Ø PRINT #6;"ATARI"                     *
*                                         *
*******************************************
```

Now LIST.

Notice your LIST appears in the TEXT window at the bottom of the screen.

INFORMATION

To POSITION information in the GRAPHICS window, POSITION X,Y can be used.

ENTER/RUN/OBSERVE

```
10 GR.2
20 POSITION 7,4
30 PRINT #6;"ATARI"
```

Press the [SYSTEM RESET] key.

Now LIST.

In the GRAPHICS 2 mode, the graphics part of the screen is 20 units across by 10 units down. Line 20 placed the first letter A, 7 units across and 4 units down.

CHANGE IT/RUN/OBSERVE

Add these lines:

```
40 POSITION 8,6
50 PRINT #6;"800"
```

CHANGE IT/RUN/OBSERVE

Now these:

```
60 POSITION 4,2

70 PRINT #6;"I LIKE THE"
```

CHANGE IT/RUN/OBSERVE

Add these lines:

```
40 GR.1
50 POSITION 7,12
60 PRINT #6;"800"
```

In the GRAPHICS 1 mode, the GRAPHICS part of the screen is 20 units across by 20 units down. Now add:

```
35 FOR T=1 TO 300:NEXT T
```

CHANGE IT/RUN/OBSERVE

Try this:

```
10 GR.18
```

Did you notice what happened to the blue at the bottom? If you missed it, change line 10 back to GR.2 and RUN. Now try this:

```
40 GR.17
70 FOR T=1 TO 400:NEXT T
```

Add this:

```
 80 GOTO 80
```

Notice that adding 16 to the GRAPHICS number removes the blue text area at the bottom of the screen. (GR.2 plus 16=18 while GR.1 plus 16=17.)

CHALLENGE

Create a program using large letters that says nice things about your friends. Place it exactly where you want it on the screen.

REVIEW: Choose the command or key which will cause the function described below.

COMMAND/KEY	FUNCTION
	With this command, you can control the voice, the pitch or frequency, the distortion and volume of the sound your computer produces.
	This command puts you in the GRAPHICS mode that produces tall fat letters.
	This command puts you in the GRAPHICS mode that produces short fat letters.
	This moves the cursor to the X and Y value given.

REFERENCE

COMMAND/KEY	FUNCTION
GR.Ø	This useful command clears the screen and places the cursor in the upper left-hand corner of the screen.
SOUND	With this command, you can control the distortion, pitch or frequency, voice and volume of the sound your computer produces.
(COMMA) ,	When used with PRINT, this causes the cursor to move to the first space in the next preset zone.
CONT	Entering this command after stopping a program will often cause a program to continue running from the point at which it was stopped.
END	When your computer encounters this command, it does exactly what the command says--it ends the program.
RETURN	Pressing this key enters information into the computer.

REFERENCE (continued)

COMMAND/KEY	FUNCTION
BREAK	Pressing this key stops or interrupts your program. It enables you to gain control of the computer.
DELETE BACK S	This key moves the cursor to the left.
GOTO	This command sends the computer directly to another line in the program.
LIST	This command will give you a listing of the program in the computer's memory.
NEW	Be careful! This command erases your program!
CLOAD	Use this command to copy a program from a cassette tape into the computer's memory.
PRINT	This command causes something to be printed on the screen.
RUN	Entering this causes the computer to follow the program in memory.

REFERENCE (continued)

COMMAND/KEY	FUNCTION
CSAVE	This is the command that you use to save a program in the computer's memory on a cassette tape.
(SEMICOLON) ;	Used with a PRINT statement, this makes the computer print on the same line unless that line is full.
GR.1	This command puts you in the GRAPHICS mode that produces short, fat letters.
GR.2	This command puts you in the GRAPHICS mode that produces tall, fat letters.
POSITION X,Y	This moves the cursor to the X and Y value given.
PRINT #6	Allows you to print in the GRAPHICS window.

CONGRATULATIONS!!!

You have now finished the red instructional level of TLC FOR GROWING MINDS and have a working vocabulary of BASIC commands you can use to command your microcomputer.

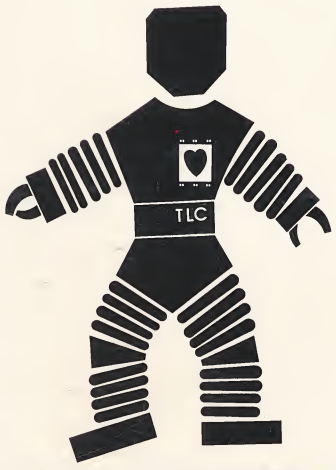
You are now ready to do TWO things:

(1) Gain experience using the commands you have already learned in a variety of new ways, and

(2) Learn more commands.

The TLC Project Book, Volume I/II, will help you gain experience using the commands you have already learned, and Volume II (Orange) of TLC FOR GROWING MINDS will help you learn more commands.

Creative Learning Association
Charleston, IL 61920



THINKING · LEARNING · CREATING

TLC

for Growing Minds

CREATIVE LEARNING ASSOCIATION, INC.
RR#4, Box 330
Charleston, Illinois 61920
(217)345-1010

ATA-R-1

ISBN 0-88193-071-7